# CHROMOSOME NUMBERS IN CHIHUAHUAN UMBELLIFERAE

BY

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In his ethnobotanical studies of the Tarahumara culture in the Sierra Madre of southwestern Chihuahua, Robert A. Bye, Jr., made a concerted and very successful effort to obtain material of Umbelliferae for chromosome counts. The results of these counts (made by Chuang) are shown in the accompanying table and Plate LXV, and some brief comments (by Constance) follow (Table I and Plate LXV, a–k).

*Donnellsmithia* C. & R. The report on *D. silvicola* is new: that of $n=20$ for *D. ternata* disagrees with one of $n=21$ for the same taxon (Constance, Chuang and Bell, in press). Chromosome numbers in this genus are still confusing. Counts made on eight specific taxa have yielded the following haploid numbers: 11, 14, 20, 21, 22, 40, 42, 44. Thus, both *D. silvicola* and *D. ternata* are probably tetraploid.

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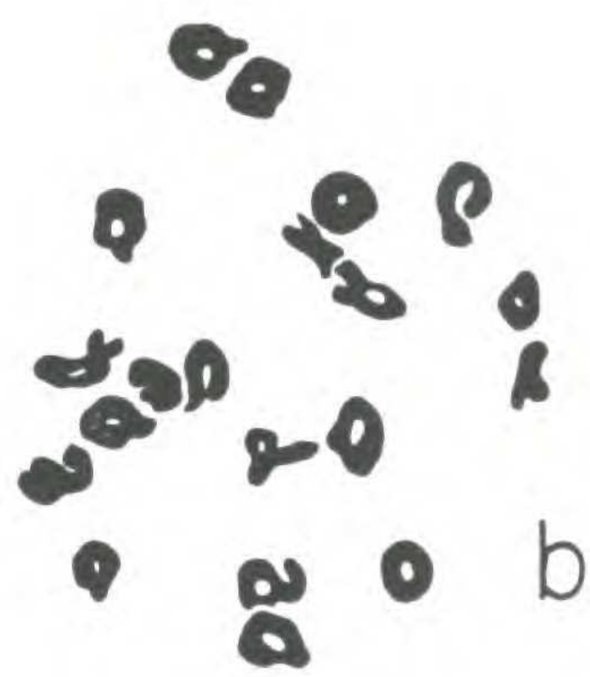
## EXPLANATION OF THE ILLUSTRATION

Karyotypes of Chihuahuan umbelliferae

a, *Donnellsmithia ternata* (S.Wats.) Math. & Const., Diak., Bye 4393; b, *D. silvicola* Const. & Bye, Diak., Bye 6376; c, *Tauschia bicolor* Const. & Bye, Diak., Bye 3863; d, *T. tarahumara* Const. & Bye, MII, Bye 6288; e, *Arracacia edulis* S.Wats., Diak., Bye 6753; f, *Eryngium fluitans* M.E. Jones, MI, Bye 4763; g, *E. Gentryi* Const. & Bye, Diak., Bye 4766; h, *E. heterophyllum* Engelm., Diak., Bye 4334; i, *E. Lemmonii* Coult. & Rose (*E. calaster* Standl.), MI, Bye 4463; j, *E. Lemmonii* Coult. & Rose (*E. calaster* Standl.), MII, Bye 4809; k, *E. phyteumae* Delar.f., MII, Bye 5905 (Const. 1906). (Diak.=Diakinesis; MI, MII-Metaphases I and II. All ca. ×1050).

# Plate LXV

a



b

c

d

e

f

g

h

i

j

k

*Tauschia* Schlecht. Both *T. bicolor* and *T. tarahumara* were previously uncounted. Five other species of the genus have revealed only $n=11$ and $n=22$, so the count of $n=44$ for *T. tarahumara*, a probable octoploid, represents a new polyploid level for the genus.

*Arracacia* Bancr. There is no previous chromosome count for *A. edulis*, a species which has been placed alternately under *Tauschia*. The complement of $n=20$ is equally discordant in both genera. The fifteen specific taxa of *Arracacia* examined heretofore have all shown a haploid number of 22, except for one unexplained occurrence each of the numbers 14 and 32.

*Ligusticum* L. The count of $n=11$ for *L. Porteri*, which has been made before, agrees with findings on some 16 species of this circumboreal genus, all of which showed $n=11$, $n=22$, or $n=33$, save for an anomalous $n=12$ and one $n=27$.

*Pseudocymopterus* C. & R. The count of $n=11$ for *P. montanus* coincides with earlier findings for this genus and species.

*Prionosciadium* S. Wats. Of eight taxa of this genus counted, six have $n=22$, two have $n=21$. A count of $n=22$ for *P. madrense* conforms to earlier information.

*Eryngium* L. Of the six counts reported here, only that for *E. Gentryi*, $n=7$, is new. From some 100 species that have been counted in this very distinctive cosmopolitan genus, it seems clear that the basic number is $n=8$. However, there are descending aneuploid series extending to $n=7$, $n=6$, or even $n=5$ in both hemispheres, sometimes in what appears to be the same spe-

cies, as in *E. heterophyllum* and *E. Lemmonii*. Extensive polyploidy, particularly in the Americas, has arisen on the basic complement of 8 ($n = 16$, 24, 32, 40, 48), and smaller series based apparently on 7 in Eurasia.

## LITERATURE CITED

Constance, L., T.I. Chuang and C.R. Bell. Chromosome numbers in Umbelliferae V. Amer. Jour. Bot., in press.

TABLE I

Chromosome numbers of Chihuahuan Umbelliferae.

| Name | n= | Voucher Specimen* | Municipio and Locality |
|---|---|---|---|
| *Donnellsmithia* | | | |
| 1. *ternata* (S.Wats.) C. & R. | 20 | *Bye 4393* | Guachochi, Cusárare |
| 2. *silvicola* Const. & Bye | 20 | *Bye 6376* | Guazapares, San Rafael–Las Lagunitas |
| *Tauschia* | | | |
| 3. *bicolor* Const. & Bye | 22 | *Bye 3863* | Batopilas–Urique, between Quírare and Basigochic |
| 4. *tarahumara* Const. & Bye | 44 | *Bye 6388* | Bocoyna, San Ignacio Arareco |
| *Arracacia* | | | |
| 5. *edulis* S.Wats. | 20 | *Bye 6753* | Guachochi, Cusárare |
| *Ligusticum* | | | |
| 6. *Porteri* C. & R. | 11 | *Bye 6651* | Bocoyna, W of Creel |
| *Pseudocymopterus* | | | |
| 7. *montanus* (A.Gray) C. & R. | 11 | *Bye 6637* | Bocoyna, W of Creel |
| *Prionosciadium* | | | |
| 8. *madrense* S.Wats. | 22 | *Bye 6352* | Batopilas, S of Quírare |
| *Eryngium* | | | |
| 9. *fluitans* M.E. Jones | 7 | *Bye 4763* | Bocoyna, W of Gonogochi |
| 10. *Gentryi* Const. & Bye | 7 | *Bye 4766* | Bocoyna, E of Gonogochi |
| 11. *heterophyllum* Engelm. | 8 | *Bye 4334* | Bocoyna, Gonogochi |
| 12. *Lemmonii* C. & R. | 8 | *Bye 4463* | Batopilas, N of Quírare |
| | 7 | *Bye 4809* | Bocoyna, Creel–San Ignacio Arareco |
| 13. *phyteumae* Delar.f. | 7 | *Bye 5905* | Bocoyna, W of Creel |

* Voucher specimens are preserved in ECON, GH and UC.